

10/042,093  
ARC919970008US2

**IN THE CLAIMS:**

**Please amend the claims to read as follows:**

1. (Currently Amended) A computer program product, for use with a computer system, for directing the computer system to execute a search of information resources, the resources having content-based links between each other, to identify a desired subset of the information resources which satisfy a desired criterion, the computer program product comprising:

    a computer-readable medium;

    means, provided on the recording medium, for directing the computer system to identify an initial set of information resources;

    means, provided on the recording medium, for directing the computer system to define initial authoritativeness information for the initial set;

    means, provided on the recording medium, for directing the computer system to use the initial authoritativeness information as input authoritativeness information, for selectively executing at least one [to execute the steps] of:

        [(i)] producing first authoritativeness information about a set of information resources pointed to by links in resources of the input set, [,] and

        [(ii)] producing second authoritativeness information about a set of information resources having links that point to resources of the input set; and

    means, provided on the recording medium, for directing the computer system to produce a final set of information resources based on at least one of the first and second authoritativeness information.

2. (Currently Amended) A computer program product as recited in [claim 1] claims 1 or 58 or 59 or 60, wherein the information resources include World Wide Web pages, and the content-based links include hyper-links.

3. (Currently Amended) A computer program product as recited in [claim 1] claims 1 or 58 or 59 or 60, wherein the means for directing to identify an initial set of information resources includes means, provided on the recording medium, for directing the computer system to

10/042,093  
ARC919970008US2

obtain, as an input, an information resource containing subject matter of interest.

4. (Original) A computer program product as recited in claim 3, wherein the means for directing to identify an initial set of information resources includes means, provided on the recording medium, for directing the computer system to obtain, as an input, an information resources linked to the input information resource.

5. (Currently Amended) A computer program product as recited in claim [1] 58, wherein:

the means for directing to execute said [the steps of] producing said first and second authoritativeness information is operative in a series of iterations;

the initial authoritativeness information is used as input authoritativeness information for a first iteration; and

the produced first and second authoritativeness information is a result of the iteration, the first and second authoritativeness information produced in a given iteration to be used as the input authoritativeness information for the next iteration.

6. (Currently Amended) A computer program product as recited in claim [1] 56 further comprising:

means, provided on the recording medium, for directing the computer system to execute said [the steps of] producing said first authoritativeness information and said producing said second authoritativeness information in a series of iterations until a predetermined condition is met.

7. (Original) A computer program product as recited in claim 6, wherein the predetermined condition includes the execution of a specified number of iterations.

8. (Original) A computer program product as recited in claim 6, wherein the predetermined condition includes a steady state in which further iterations result in substantially the same results.

10/042,093

ARC919970008US2

9. (Original) A computer program product as recited in claim 6, wherein the means for directing to identify an initial set of information resources includes means, provided on the recording medium, for directing the computer system to execute a keyword-based query search, results of the search including information resources to be included in the initial set.

10. (Original) A computer program product as recited in claim 9, wherein the means for directing to identify an initial set of information resources includes means, provided on the recording medium, for directing the computer system to identify information resources linked to or from the information resources which are the results of the search, the former information resources also to be included in the initial set.

11. (Original) A computer program product as recited in claim 10, wherein the means for directing to define initial authoritativeness information includes means, provided on the recording medium, for directing the computer system to select an initial numerical authoritativeness value for each of the information resources of the initial set.

12. (Original) A computer program product as recited in claim 11, wherein the means for directing to define initial authoritativeness information further includes means, provided on the recording medium, for directing the computer system to define an authority value and a hub value for each of the information resources of the initial set.

13. (Original) A computer program product as recited in claim 12, wherein the defined authority values and hub values are processed as vectors, each vector containing a respective term corresponding with each respective one of the information resources of the initial set, and having stored therein the value defined for that respective one of the information resources of the initial set.

14. (Original) A computer program product as recited in claim 12, wherein:

an initial hub value is defined as 1 if the information resource was found by the keyword-based query search, and 0 if the information resource is linked to or from the

10/042,093  
ARC919970008US2

information resources which are the results of the search; and  
an initial authority value is defined as 0 for all information resources.

15. (Original) A computer program product as recited in claim 12, wherein for each iteration:  
the hub value for an information resource is updated as the sum of the authority values  
for authority information resources which point to the hub information resource; and  
the authority value for an information resource is updated as the sum of the hub values  
for hub information resources which are pointed to by the information resource.

16. (Original) A computer program product as recited in claim 15, wherein each iteration  
further includes normalizing the hub and authority values for the information resources.

17. (Currently Amended) A computer program product as recited in [claim 1] claims 1 or 58  
or 59 or 60, wherein the means for directing to produce a final set of information resources  
includes means, provided on the recording medium, for directing the computer system to  
select information resources from the set based on their hub and authority values.

18. (Original) A computer program product as recited in claim 17, wherein the means for  
directing to select includes means, provided on the recording medium, for directing the  
computer system to select information resources whose hub values or authority values have  
greatest magnitudes.

19. (Original) A computer program product as recited in claim 17, wherein the means  
for directing to select includes means, provided on the recording medium, for directing the  
computer system to select a plurality of successive communities, selecting each successive  
community including selecting information resources whose hub values or authority values  
have greatest magnitudes of those information resources not already selected for a prior  
community.

20. (Currently Amended) A method for executing a search of information resources, the

10/042,093

ARC919970008US2

resources having content-based links between each other, to identify a desired subset of the information resources which satisfy a desired criterion, the method comprising the steps of:

identifying an initial set of information resources;  
defining initial authoritativeness information for the initial set;  
using the initial authoritativeness information as input authoritativeness information,  
selectively executing at least one [the steps] of:

[(i)] producing first authoritativeness information about a set of information resources pointed to by links in resources of the input set; [,] and  
[(ii)] producing second authoritativeness information about a set of information resources having links that point to resources of the input set; and  
producing a final set of information resources based on at least one of the first and second authoritativeness information.

21. (Currently Amended) A method as recited in [claim 20] claims 20 or 61 or 62 or 63, wherein the information resources include World Wide Web pages, and the content-based links include hyperlinks.

22. (Currently Amended) A method as recited in [claim 20] claims 20 or 61 or 62 or 63, wherein said [the step of] identifying said [an] initial set of information resources includes obtaining, as an input, an information resource containing subject matter of interest.

23. (Currently Amended) A method as recited in claim 22, wherein said [the step of] identifying said [an] initial set of information resources includes obtaining, as an input, an information resource containing subject matter of interest.

24. (Currently Amended) A method as recited in claim [20] 61, wherein:

said [the step of executing the steps of] producing said first and second authoritativeness information is executed in a series of iterations;  
the initial authoritativeness information is used as input authoritativeness information for a first iteration; and

10/042,093  
ARC919970008US2

the produced first and second authoritativeness information is a result of the iteration, the first and second authoritativeness information produced in a given iteration to be used as the input authoritativeness information for the next iteration.

25. (Currently Amended) A method as recited in claim [20] 61, wherein said [the steps of] producing said first authoritativeness information and said producing said second authoritativeness information are executed in a series of iterations until a predetermined condition is met.

26. (Original) A method as recited in claim 25, wherein the predetermined condition includes the execution of a specified number of iterations.

27. (Original) A method as recited in claim 25, wherein the predetermined condition includes a steady state in which further iterations result in substantially the same results.

28. (Currently Amended) A method as recited in claim 25, wherein said [the step of] identifying said [an] initial set of information resources includes executing a keyword-based query search, the results of the search including information resources to be included in the initial set.

29. (Currently Amended) A method as recited in claim 28, wherein said [the step of] identifying said [an] initial set of information resources further includes identifying information resources linked to or from information resources which are the results of the search, the former information resources also to be included in the initial set.

30. (Currently Amended) A method as recited in claim 29, wherein said [the step of] defining said initial authoritativeness information includes selecting an initial numerical authoritativeness value for each of the information resources of the initial set.

31. (Currently Amended) A method as recited in claim 30, wherein said [the step of] defining

10/042,093

ARC919970008US2

said initial authoritativeness information further includes defining an authority value and a hub value for each of the information resources of the initial set.

32. (Original) A method as recited in claim 31, wherein the defined authority values and hub values are processed as vectors, each vector containing a respective term corresponding with each respective one of the information resources of the initial set, and having stored therein the value defined for that respective one of the information resources of the initial set.

33. (Original) A method as recited in claim 31, wherein:

an initial hub value is defined as 1 if the information resource was found by the keyword-based query search, and 0 if the information resource is linked to or from the information resources which are the results of the search; and

an initial authority value is defined as 0 for all information resources.

34. (Original) A method as recited in claim 31, wherein, for each iteration:

the hub value for an information resource is updated as the sum of the authority values for authority information resources which point to the hub information resource; and

the authority value for an information resource is updated as the sum of the hub values for hub information resources which are pointed to by the information resource.

35. (Original) A method as recited in claim 34, wherein each iteration further includes normalizing the hub and authority values for the information resources.

36. (Currently Amended) A method as recited in [claim 20] claims 20 or 61 or 62 or 63, wherein:

each information resource is associated with an authority value and a hub value; and  
said [the step of] producing said [a] final set of information resources includes selecting information resources from the set based on the hub and authority values.

37. (Currently Amended) A method as recited in claim 36, wherein said [the step of] selecting

10/042,093  
ARC919970008US2

includes selecting information resources whose hub values or authority values have greatest magnitudes.

38. (Currently Amended) A method as recited in claim 36, wherein said [the step of] selecting includes selecting a plurality of successive communities, selecting each selective community including selecting information resources whose hub values or authority values have greatest magnitudes of those information resources not already selected for a prior community.

39. (Currently Amended) A system for executing a search of information resources, the resources having content-based links between each other, to identify a desired subset of the information resources which satisfy a desired criterion, the system comprising:

means for identifying an initial set of information resources;  
means for defining initial authoritativeness information for the initial set;  
means for using the initial authoritativeness information as input authoritativeness information, for selectively executing [to execute the steps] at least one of:  
[(i)] producing first authoritativeness information about a set of information resources pointed to by links in resources of the input set, and  
[(ii)] producing second authoritativeness information about a set of information resources having links that point to resources of the input set; and  
means for producing a final set of information resources based on at least one of the first and second authoritativeness information.

40. (Currently Amended) A system as recited in [claim 39] claims 39 or 64 or 65 or 66, wherein the information resources include World Wide Web pages, and the content-based links include hyperlinks.

41. (Currently Amended) A system as recited in [claim 39] claims 39 or 64 or 65 or 66, wherein the means for identifying an initial set of information resources includes means for obtaining, as an input, an information resource containing subject matter of interest.

10

10/042,093

ARC919970008US2

42. (Original) A system as recited in claim 41, wherein the means for identifying an initial set of information resources includes means for identifying a further set of information resources linked to the input information resource.

43. (Currently Amended) A system as recited in claim [39] 64, wherein:

the means for executing said [the steps of] producing said first and second authoritativeness information is operative in a series of iterations;

the initial authoritativeness information is used as input authoritativeness information for a first iteration; and

the produced first and second authoritativeness information is a result of the iteration, the first and second authoritativeness information produced in a given iteration to be used as the input authoritativeness information for the next iteration.

44. (Currently Amended) A system as recited in claim [39] 64 further comprising:

means for executing [the steps of] producing first authoritativeness information and producing second authoritativeness information in a series of iterations until a predetermined condition is met.

45. (Original) A system as recited in claim 44, wherein the predetermined condition includes the execution of a specified number of executions.

46. (Original) A system as recited in claim 44, wherein the predetermined condition includes a steady state in which further iterations result in substantially the same results.

47. (Original) A system as recited in claim 44, wherein the means for identifying an initial set of information resources includes means for executing a keyword-based query search, results of the search including information resources to be included in the initial set.

48. (Original) A system as recited in claim 47, wherein the means for identifying an initial set of information resources further includes means for identifying information resources linked

10/042,093

ARC919970008US2

to or from information resources which are the results of the search, the former information resources also to be included in the initial set.

49. (Original) A system as recited in claim 48, wherein the means for defining initial authoritativeness information includes means for selecting an initial numerical authoritativeness value for each of the information resources of the initial set.

50. (Original) A system as recited in claim 49, wherein the means for defining initial authoritativeness information further includes means for defining an authority value and a hub value for each of the information resources of the initial set.

51. (Original) A system as recited in claim 50, wherein the defined authority values and hub values are processed as vectors, each vector containing a respective term corresponding with each respective one of the information resources of the initial set, and having stored therein the value defined for that respective one of the information resources of the initial set.

52. (Original) A system as recited in claim 50, wherein:

an initial hub value is defined as 1 if the information resource was found by the keyword-based query search, and 0 if the information resource is linked to or from the information resources which are the results of the search; and

an initial authority value is defined as 0 for all information resources.

53. (Original) A system as recited in claim 50, wherein, for each iteration:

the hub value for an information resource is updated as the sum of the authority values for authority information resources which point to the hub information resource; and

the authority value for an information resource is updated as the sum of the hub values for hub information resources which are pointed to by the information resource.

54. (Original) A system as recited in claim 53, wherein each iteration further includes normalizing the hub and authority values for the information resources.

12

10/042,093  
ARC919970008US2

55. (Currently Amended) A system as recited in [claim 39] claims 39 or 64 or 65 or 66, wherein the means for producing a final set of information resources includes means for selecting information resources from the set based on their hub and authority values.

56. (Original) A system as recited in claim 55, wherein the means for selecting includes means for selecting information resources whose hub values or authority values have greatest magnitudes.

57. (Original) A system as recited in claim 55, wherein the means for selecting includes means for selecting a plurality of successive communities, selecting each successive community including information resources whose hub values or authority values have greatest magnitudes of those information resources not already selected for a prior community.

58. (New) A computer program product as recited in claim 1, wherein said selectively executing comprises:

producing first authoritativeness information about a set of information resources pointed to by links in resources of the input set, and

producing second authoritativeness information about a set of information resources having links that point to resources of the input set.

59.(New) A computer program product as recited in claim 1, wherein said selectively executing comprises:

producing first authoritativeness information about a set of information resources pointed to by links in resources of the input set.

60. (New) A computer program product as recited in claim 1, wherein said selectively executing comprises:

producing second authoritativeness information about a set of information resources having links that point to resources of the input set.

10/042,093

ARC919970008US2

61 (New) A method as recited in claim 20, wherein said selectively executing comprises:  
producing first authoritativeness information about a set of information resources  
pointed to by links in resources of the input set, and  
producing second authoritativeness information about a set of information resources  
having links that point to resources of the input set.

62.(New) A method as recited in claim 20, wherein said selectively executing comprises:  
producing first authoritativeness information about a set of information resources  
pointed to by links in resources of the input set.

63. (New) A method as recited in claim 20, wherein said selectively executing comprises:  
producing second authoritativeness information about a set of information resources  
having links that point to resources of the input set.

64. (New) A system as recited in claim 39, wherein said selectively executing comprises:  
producing first authoritativeness information about a set of information resources  
pointed to by links in resources of the input set, and  
producing second authoritativeness information about a set of information resources  
having links that point to resources of the input set.

65. (New) A system as recited in claim 39, wherein said selectively executing comprises:  
producing first authoritativeness information about a set of information resources  
pointed to by links in resources of the input set.

66. (New) A system as recited in claim 39, wherein said selectively executing comprises:  
producing second authoritativeness information about a set of information resources  
having links that point to resources of the input set.

67. (New) A computer program product as recited in claim 1, wherein said initial set of

10/042,093

ARC919970008US2

information resources is identified by using a keyword-based query.

68. (New) A computer program product as recited in claim 1, wherein said initial set of information resources is identified by using a term-matching algorithm.

69. (New) A computer program product as recited in claim 1, wherein said final set of information resources comprises said initial set of information resources and a refined set of information resources having at least one of a link from and a link to said information resources in said initial set of information resources.

70. (New) A computer program product as recited in claim 9, wherein said means for directing the computer system to identify information resources linked to or from the information resources which are the results of the keyword-based search, comprises means for imposing an upper bound on the allowed number of information resources linked to the information resources which are the results of the keyword-based search.

71. (New) A computer program product, for use with a computer system, for directing the computer system to execute a search of information resources, the resources having content-based links between each other, to identify a desired subset of the information resources which satisfy a desired criterion, the computer program product comprising:

a computer-readable medium;

means, provided on the recording medium, for directing the computer system to identify an initial set of information resources;

means, provided on the recording medium, for directing the computer system to define initial authoritativeness information for the initial set;

means, provided on the recording medium, for directing the computer system to use the initial authoritativeness information as input authoritativeness information, to execute:

producing first authoritativeness information about a set of information resources pointed to by links in resources of the input set; and

producing second authoritativeness information about a set of information

10/042,093

ARC919970008US2

resources having links that point to resources of the input set; and  
means, provided on the recording medium, for directing the computer system to  
produce a final set of information resources based on the first and second authoritativeness  
information.

72. (New) A method for executing a search of information resources, the resources having  
content-based links between each other, to identify a desired subset of the information  
resources which satisfy a desired criterion, the method comprising the steps of:

identifying an initial set of information resources;  
defining initial authoritativeness information for the initial set;  
using the initial authoritativeness information as input authoritativeness information,  
executing:  
producing first authoritativeness information about a set of information  
resources pointed to by links in resources of the input set; and  
producing second authoritativeness information about a set of information  
resources having links that point to resources of the input set; and  
producing a final set of information resources based on the first and second  
authoritativeness information.

73. (New) A system for executing a search of information resources, the resources having  
content-based links between each other, to identify a desired subset of the information  
resources which satisfy a desired criterion, the system comprising:

means for identifying an initial set of information resources;  
means for defining initial authoritativeness information for the initial set;  
means for using the initial authoritativeness information as input authoritativeness  
information, to execute:  
producing first authoritativeness information about a set of information  
resources pointed to by links in resources of the input set, and  
producing second authoritativeness information about a set of information  
resources having links that point to resources of the input set; and

16

10/042,093  
ARC919970008US2

means for producing a final set of information resources based on the first and second  
authoritativeness information.